

Asymmetric Currency Risks

One of the great quandaries of market analysis is reconciling the central precept of technical analysis, that immutability of human behavior leads to repeatable patterns over time and by implication to self-similarity across both timeframes and separate markets, with observed differences in return distributions across markets. As an equal opportunity afflicter, we should note the central precept of fundamental analysis, market efficiency, cannot provide much guidance here, either.

In reality, none of this should be a surprise. We can decompose all trades into spreads. At the most basic, the direct purchase of any asset for cash involves swapping the short-term interest rate of return on cash for the at-risk return on the asset purchased. In the case of currencies, we are swapping one set of cash flows received for another plus the change in the spot rate over time. As different countries have different interest rate policies and monetary management institutions, we should expect the resulting currency trades between any two national monetary regimes to reflect these differences on a repeatable basis over time so long as the national regimes generating those differences remain constant.

The net result of asymmetric risk profiles is familiar across a wide range of markets. All traders accept stocks decline more rapidly than they rise, and many of the soft commodities' charts can be described as "three months up and three minutes down."

Let's take a look at the long-term histories of three currencies, the euro, the Japanese yen and the Canadian dollar in terms of asymmetry, but with a twist. Instead of the daily price returns beloved by students of such matters, let's take a step up the time scale to weekly. Not only does this sidestep the increasingly vexing question of when a trading "day" begins and ends in the 24-hour currency market, it highlights the much larger changes that take place over a week after stops are run, barrier options are hit, etc. Finally, let's modify the weekly return into something we will dub the "range return." These are the percentage changes from the current week's high or low against the previous week's last trade.

Candles In The Wind

Now let's display the weekly data for the three currencies on semilogarithmic candlestick charts. These will highlight the percentage changes for each currency. Positive and negative weeks are depicted in green and red candlestick bodies, respectively, and the shadows are suppressed to reduce the visual clutter.

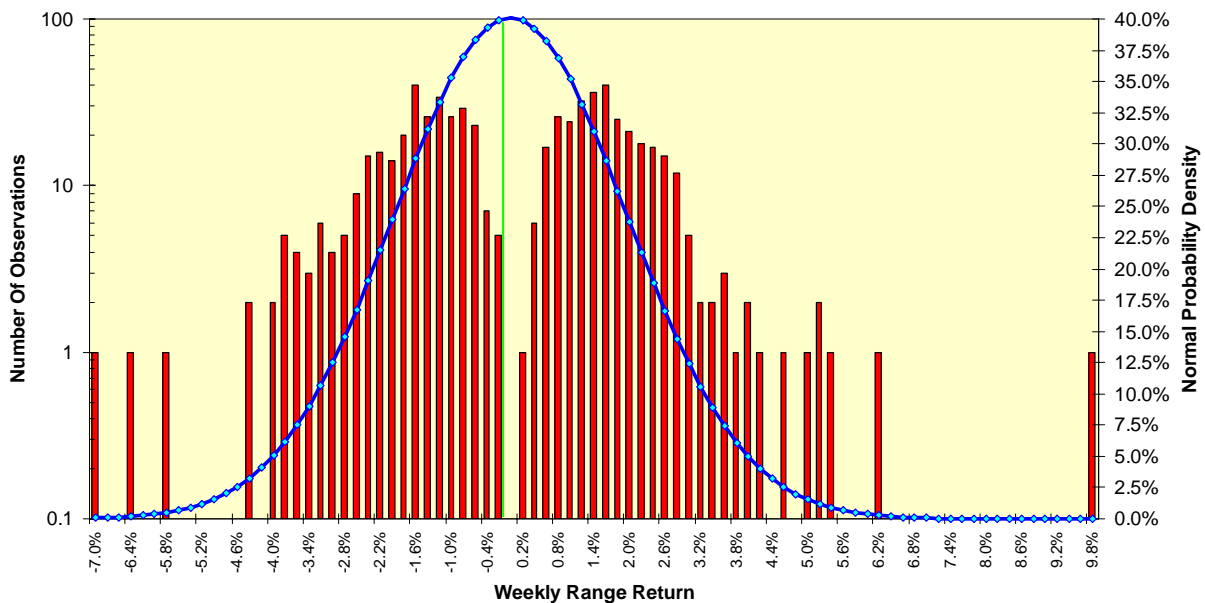
First, let's take a look at the currency with the deepest market and the shortest history, the euro. A visual inspection suggests negative weekly range returns for the euro are larger than positive returns, and there is a good fundamental reason behind this, too. After mid-2002, when the so-called "mattress trade" of selling legacy euro cash for dollars ended, the euro has been in a secular uptrend against the dollar. As is common in secular bull (bear) markets, the retracement selloffs (rallies) are sharper than are the movements with the trend. This is due to the eagerness of trend-followers to protect profits and the asymmetry of speculative positions (see "Currencies And Commitments," June 2008).

Weekly Candlestick Chart For Euro



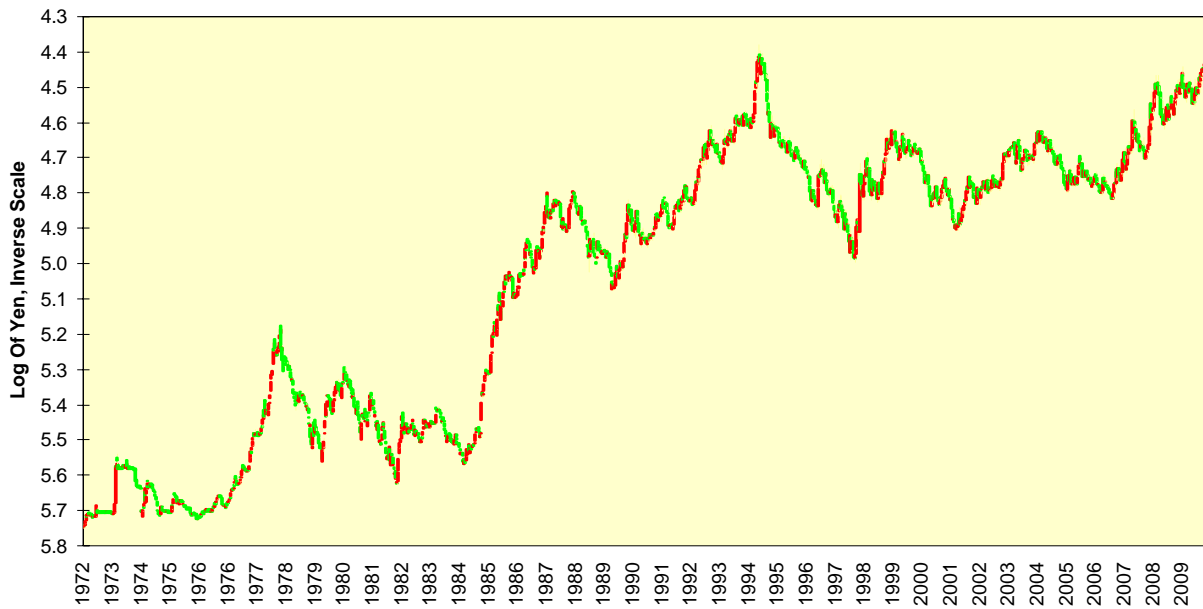
But while the distribution of weekly range returns on the euro may look skewed, a histogram indicates something quite different indeed. The returns are not distributed normally, as one might expect and as shadowed by a blue normal probability density curve, but are bimodal in nature. Like a dromedary camel, the euro has two humps.

Euro's Distribution Of Weekly Range Returns



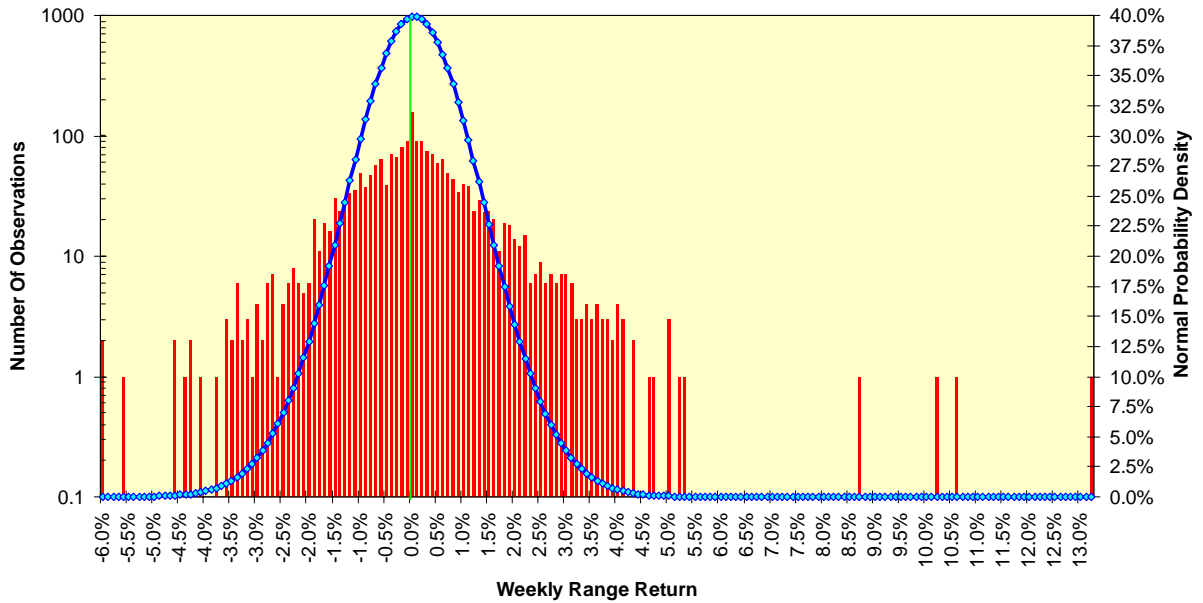
Now let's take a look at the Japanese yen, which along with the Canadian dollar has an active history going back to 1972. Anyone who has traded the yen, presumably everyone reading this, senses it rallies more violently than it sells off, and this is certainly observable in the weekly candlestick chart. Once again, the fundamentals support this observation; not only must Japanese exporters be paid at predictable intervals, but the yen has been a funding currency for carry trades since the mid-1990s. As those who have borrowed the yen sense a policy change to raise borrowing costs in Japan see the same information at the same time, they must react quickly to repurchase the JPY.

Weekly Candlestick Chart For Japanese Yen



Unlike the case for the euro, the histogram for the yen confirms our beliefs. It is both unimodal in nature and has a number of very large weekly range returns.

Yen's Distribution Of Weekly Range Returns



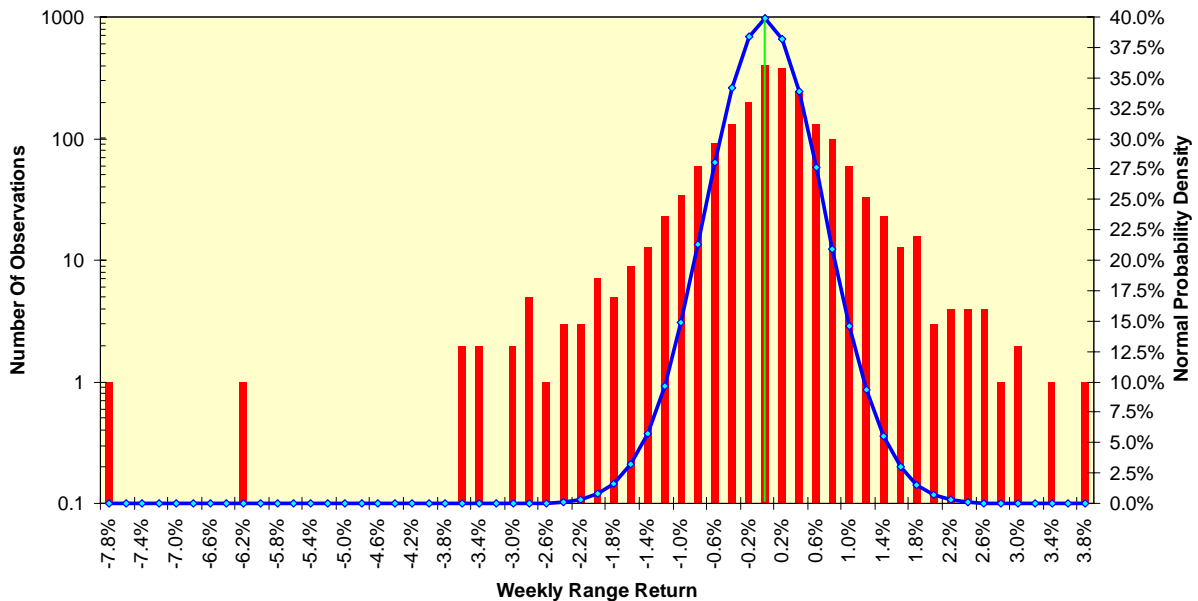
Now let's come to the Canadian dollar. This is one of the trendiest markets (see "Let The Trend Be Your Friend: The Majors," January 2009), but experience indicates it can both trend and move abruptly in both directions, not just higher or lower. So saying, the period between 2002 and 2006 saw some extremely impressive gains for the CAD.

Weekly Candlestick Chart For Canadian Dollar



The distribution of weekly range returns confirms the sense the Canadian dollar has more symmetry than either the euro or the yen. Indeed, if it were not for two rather prominent selloffs out of more than 2,000 weeks, we might have to classify weekly range returns here as normally distributed.

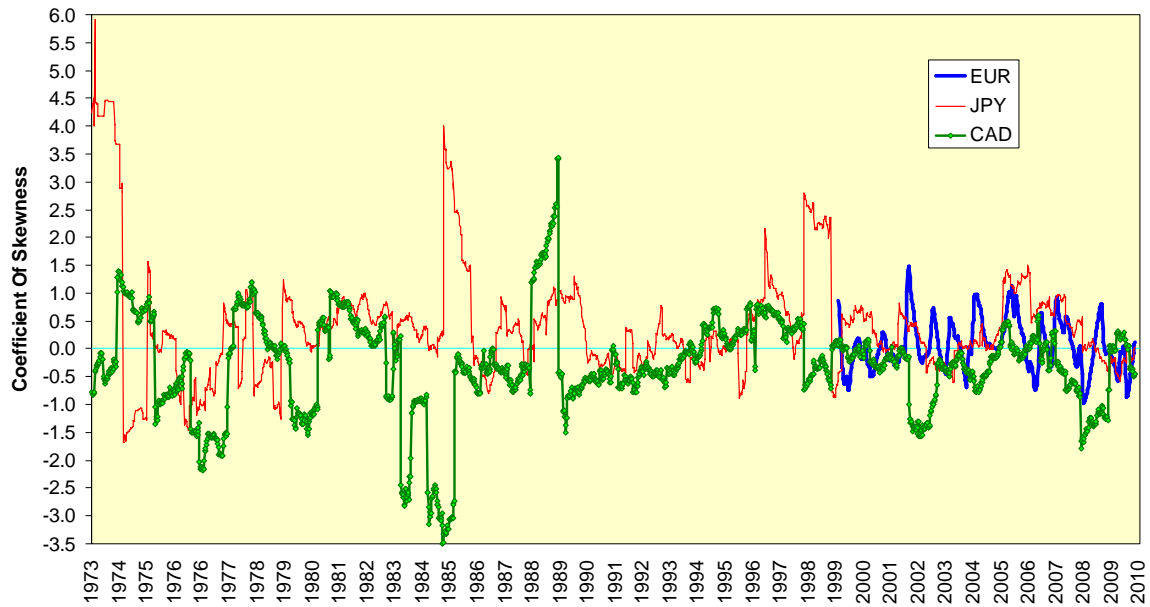
Canadian Dollar's Distribution Of Weekly Range Returns



Skewness And Kurtosis

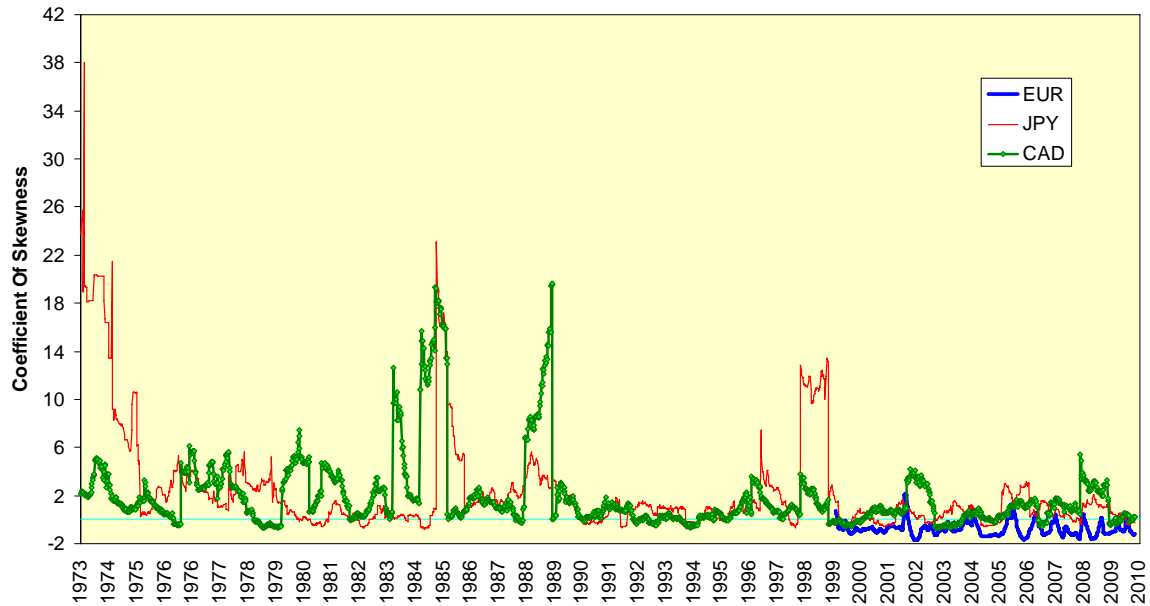
If we plot rolling one-year skewness of weekly range returns for the three currencies, we see they are anything but constant. The early history of the yen, for example, was wildly skewed toward positive returns as it began a multiple-year bull market in the 1970s. The CAD, on the other hand, shows strong skewness in both directions, while the euro's skewness is surprisingly tame over its short history. No trading strategy based upon a naturally embedded option would work in any of these currencies.

Rolling One-Year Skewness Of Weekly Range Returns



An examination of the kurtosis of the weekly range returns highlights the comments made above for both the euro and the Canadian dollar. A positive coefficient of skewness indicates a peaked distribution; a negative coefficient indicates a flat distribution. The “normal” Canadian dollar has consistently positive kurtosis, while the surprisingly languid euro spent nearly all of its pre-2007 to 2009 financial crisis history with a flat distribution of returns.

Rolling One-Year Kurtosis Of Weekly Range Returns



The most important conclusion we can reach here is one we have reached in other times and in other places and that is one size does not fit all when it comes to market analysis and the design of trading systems. Anyone who ignores the Canadian dollar’s greater propensity to trend or the yen’s positive skewness is putting themselves at an unnatural and needless disadvantage. This business is tough enough without using all of the information at your disposal.